

Sept. 9th, 2005

PPIRM-77XH

Answers

Re: FCC ID PPIRM-77XH

To: Martin Perrine
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FCC Application Processing Branch

Applicant: Nokia GmbH
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SAR

1) Please justify that multi-peak SAR procedures were followed. See page 26.
Remeasure as necessary.

- The principle of carrying out cube scans with the peaks inside 2 dB from the highest peak is valid with the measurements in this SAR report. None of the measurements required scan of second cube based on the 2 dB rule.

2) Please explain the statement "EGPRS mode was not measured, because maximum averaged output power is more than 3 dB lower in EGPRS mode than in GPRS mode." on page 4. EGPRS results were later provided also the power statement does not appear to be correct. Please also confirm that the GPRS mode does not have voice capability. The EMC radiated power report suggests that GPRS works with the flip open.

- The SAR reports of PPIRM-77H and PPIRM-77XH may be confusing as the both have only the type RM-77 in footer and full FCC ID is given only on cover page.

The statement "EGPRS mode was not measured, because maximum averaged output power is more than 3 dB lower in EGPRS mode than in GPRS mode." is valid for PPIRM-77XH. PPIRM-77XH does not have voice capability in EGPRS or GPRS mode.

EMC

1) For the radiated power test

- Please provide details of the receiver including measurement settings and BW.
- Please explain the differences in power noted for GPRS and EGPRS noted on pages 6 and 7 of 9.
- Please explain the differences in the form 731 line items.

- RMS Average peak, 1 MHz Band Width
- GPRS lists values in dual slot GMSK mode, EGPRS shows results of single slot EDGE
- Difference is due to GMSK and Edge modulation supported by the phone

2) Form 731 shows emission designator G7W has been associated with EDGE PSK modulation. Does this phone have EDGE capability? If so please provide test results.

- Phone is supporting EDGE, EDGE results can be found in Part 22 and part 24 EMC report.

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HAC

- 1) Please provide validation test information for AM and WD signal types as recommended by C63.19.
 - Information for AM not available, response to AM modulated signal is not relevant to the test results.
GSM-signal is simulated with pulse modulation in the both frequency bands, 850MHz and 1900MHz, and modulation response is examined.
- 2) Please state the FCC ID in the test report.
 - FCC ID is mentioned on the front page of the HAC report.
- 3) Please provide full details of the device measured power at the time of testing. Please detail how HAC mode power compares to full power.
 - Calibration data can be found in the Exhibit 10 "Tune up procedure".
Radiated powers were measured from the SAR samples.
- 4) Please provide an uncertainty budget and separately discuss locally determined components.
 - Document uploaded beside this correspondence. See file:
HAC_ProbeCalibrationUncertainty.doc
- 5) Please provide full calibration documents for the system including verification hardware and target value justification.
 - Documents uploaded beside this correspondence. See files:
 - 1) Probe H3DV6_2005 01 20.pdf
 - 2) Dipole CD835V3_SN 1004_2005 02 23.pdf
 - 3) Dipole CD1880V3_SN 1003_2005 02 23.pdf
 - 4) Probe ER3DV6_2005 01 31.pdf
- 6) Please confirm the E field results given on page 8. There appears to be a discrepancy with data on page 15.
 - The reference result in the Table on page 8 is averaged maximum of high end and of low end of the dipole arms: 133.9 V/m. Corresponding value from the validation measurement is $(141.8+136.3)/2 = 139.1$.
 - The other E-field measurement result given in the same table (163.8) should be correspondingly: $(162.8+163.8)/2 = 163.3$.
- 7) Please provide full setup details for the validation measurement.

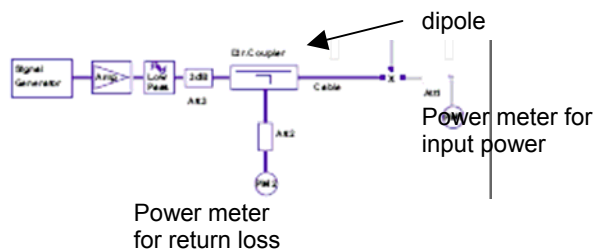
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- The input signal was an unmodulated continuous wave, and average input power = 100mW after adjustment for return loss. The proper measurement of the 1cm probe to dipole separation, which is measured from the top surface of the dipole to the calibration reference point of the sensor, defined by the probe manufacturer. A dipole antenna meeting the requirements in PC63.19 was placed in the position normally occupied by the WD. The length of the dipole was scanned with both E-field and H-field probes and the maximum values for each were recorded.

Setup for desired output power to dipole:



- 8) Please provide full details of the scan setup including resolutions, and dwell and integration times.
 - Measurement step size is 5mm, measurement time 0.5s, zeroing time 0.5s and zeroing period 10s. Measuring time is long compared to burst repetition period.
- 9) Please provide results after probe rotation in the worst case configuration.
 - This is not done. Standard requires this for 1-D probes, and we have 3-D probes.
- 10) Please reestablish peak field values using C63.19 PMF procedures given in Annex C.3.1.
 - See question/answer 1): Theoretical Crest Factor 8.3 was used.
- 11) Please clarify information on the contour plots. Page 18 seems to report a value after exclusion while page 19 seems to report a value prior to the exclusion.
 - The plots are documenting measuring setup and results for each subgrid. The results after exclusion are tabulated in Section 5.
- 12) Please detail drift measurement procedures.
 - Power reference measurement, which is the field measurement at a specified reference position, is done just before the actual measurement (e.g. HAC E-field measurement). Just after the actual measurement the field is remeasured at the same location as the most recent Power reference was measured. The field difference between the two reference measurements in dB is giving drift. This is monitoring power drift of the device under test.

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13) Please provide data demonstrating that measurement to probe center is conservative if applicable. Suggestions were made at the recent TCB training. Please use the WD in the worst case configuration. Also, please provide more detailed views of the probe tip and sensor. Mechanical drawings would be suitable if photographs cannot show full detail. Details for the H probe are lacking and the third sensor cannot be seen on the E field probe. Please provide critical dimensions as well.

- The distance in WD measurement is measured to the tip of the probe elements as indicated in report. The most relevant dimensions are also shown in report.

14) Please explain any differences in power from the HAC, SAR and EMC reports.

- Power of the HAC sample has been set according to mass production tuning targets, but power output of HAC sample was not measured separately for this filing
Radiated powers should be the same in SAR and EMC reports. Please, see the question/answer 3.

15) Please describe the test sample to include the stage in production it is from.

- Sample measured was a prototype unit.

16) Please provide E and H field contour plots with HAC mode off at the highest power channel at 850 MHz. Please scan an area 3 times the device size in both length and width.

- This is impossible to do, because the phone is a clamshell type, which means that probe will collide with the lower part of the phone if upper part is in correct position under test arch, please see the photo in Section 4.4.1